

## Keep outside dangers securely outside with 3M™ Scotchshield™ Safety & Security Window Film Ultra Series.

- ▶ Co-extruded micro-layered film composite with high grades tear resistance and high energy absorption for enhanced protection of people, property and possessions
- ▶ Mitigates hazards from shattered glass due to natural disasters
- ▶ Meets and exceeds many industry performance standards for glass fragment retention
- ▶ Helps protect people from flying glass shards, one of the most common causes of blast related injuries and fatalities
- ▶ Can be combined with 3M™ Impact Protection Attachment Systems for additional safety and security
- ▶ Helps extend the life of furnishings by significantly reducing harmful UV rays, the largest cause of fading
- ▶ Comprehensive warranty from 3M

### Ultra 800

Blast Mitigation	★★★★★
Break and Entry	★★★★★
Safety Glazing	★★★★★
Seismic	★★★★★

Best ★★★★★

Better ★★★★

Good ★★★

Fair ★★

Not Recommended ★

*In comparison to other 3M™ Safety & Security Window Films*

## Superior protection and clarity.





## Bomb Blast and Explosion Protection

- ▶ Help protect people from flying glass shards, one of the most common causes of blast related injuries and fatalities

### Completed Testing

- ▶ ASTM F1642
- ▶ GSA TS01-2003



## Safety Glazing

- ▶ Upgrade your glass to meet safety glazing codes\*
- ▶ Help protect your occupants from broken glass hazards

### Completed Testing

- ▶ ANSI Z97.1
- ▶ 16 CFR CPSC 1201
- ▶ EN 12600



## Break and Entry

- ▶ Provides precious time by helping to deter unwanted individuals from entering your building or home
- ▶ Help protect occupants and assets

### Completed Testing

- ▶ Independent lab evaluations, contact 3M for details



## Seismic and Spontaneous Glass Breakage

- ▶ Help keep glass fragments from falling from your windows, helping to protect people and potentially reducing injuries on your property

### Completed Testing

- ▶ ASTM E 1886

## Film Properties (nominal) — not for specification purposes

Film Type	Film Thickness	Construction	Graves Tear Resistance	Tensile Strength	Break Strength	Elongation at Break	Peel Strength	Abrasion Resistance
Ultra 800	8 mil (0.20mm)	Micro-layered	1,075 lbs%	31,500 psi (217 MPa)	253 lbs/in (1,123 N / 25mm)	135%	> 6 lbs/in (27 N / 25mm)	<5%

3M products are tested to multiple industry standards. Glazing systems vary. Contact 3M for more information.

\*Building codes vary, please consult with 3M and your local code official.

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# 3M™ Impact Protection Adhesive Attachment System Installation Instructions



3M™ Impact Protection Adhesive improves the overall performance of 3M Safety and Security Window Films. This unique window protection system combines the toughness of 3M's patented micro-layer safety film with 3M's world-class expertise in adhesives to help shield against impact energy from severe weather, earthquakes, bomb blasts or forced entry events. The 3M Impact Protection System also helps protect against personal injury from flying glass.

## 3M Impact Protection Adhesive:

- Commercial and Residential Applications



The following procedure describes the materials and steps that are necessary to install the 3M™ Impact Protection Adhesive attachment system.

## Products Recommended:

- 3M™ Citrus Base Cleaner  
(3M I.D. No. 62-4615-4930-5)
- 3M™ Adhesive Remover, Citrus Base  
(3M I.D. No. 62-4667-2925-8)
- 3M™ Foaming Glass Cleaner  
(3M I.D. No. 70-0708-2870-5)
- 3M™ 0000, Super Fine Synthetic Steel Wool Pad  
(3M I.D. No. 70-0706-5285-7)
- 3M™ Scotch™ Safe Release™ Masking Tape  
(3M I.D. No. 98-0701-1931-2)
- 3M™ Scotch™ Long Mask™ Masking Tape  
(3M I.D. No. 98-0701-3183-8)
- 3M™ Impact Protection Adhesive

## Window Preparation

A thorough cleaning of the glazing and frame systems before applying film and attachment is required to remove all foreign matter and contaminants such as adhesives, grease, oil, dust, water, surface dirt, old sealant or glazing compounds by using 3M Citrus Base Cleaner, alcohol or commercial cleaning solution.

**Detergent or soap and water treatments are not recommended for this step.**

1. **Assess the type of glazing stop and with an Olfa knife, trim as much of the rubber as possible without disturbing the window seal or allowing the rubber to fall into the glazing channel.**
2. Spray the glazing bead, glass and frame surface with an appropriate cleaning product and remove with a lint free cloth. Repeat if necessary to remove all foreign materials from the glass and inside window frame surfaces. If the area is particularly dirty, a light scrub with a 3M 0000 Super Fine Synthetic Steel Wool Pad is recommended to loosen contaminants. Finish with a final cleaning if needed.
3. Spray the glass with 3M Foaming Glass Cleaner or a soap and water solution. Flush the glazing bead to glass area starting at the top and working down to drain or remove any remaining contaminant from the area. Scrape the glass with a razor to remove all foreign matter. Thoroughly clean the glass a final time with soapy water and a window cleaning squeegee. Wipe around the glazing bead and frame area one final time to remove all of the soap and water solution.

## Film Installation

1. Apply the 3M™ Ultra Safety & Security Window Film to the glass, making sure that the film is installed as far into the glazing channel as possible. Cut film as you normally would around the remaining glazing bead.  
**Remember to leave enough spacing between film and glazing bead to facilitate the removal of the slip solution.**
2. Squeegee the film to the glass by pressing firmly to remove as much of the slip solution as possible, especially at the edges of the film. **Two “edge-drying” methods can be used before applying the Impact Protection attachment system.**
  - A. The panels can be left for a few weeks to ensure proper drying of the film before the IPA system is applied.

– OR –

  - B. Using a hair dryer, gently heat and bump the edges of the film to hasten the removal and drying of the water from the edges.  
**Make sure that all of the soap and water solution has been removed from the film/glass/glazing channel before applying the IPA attachment system.**

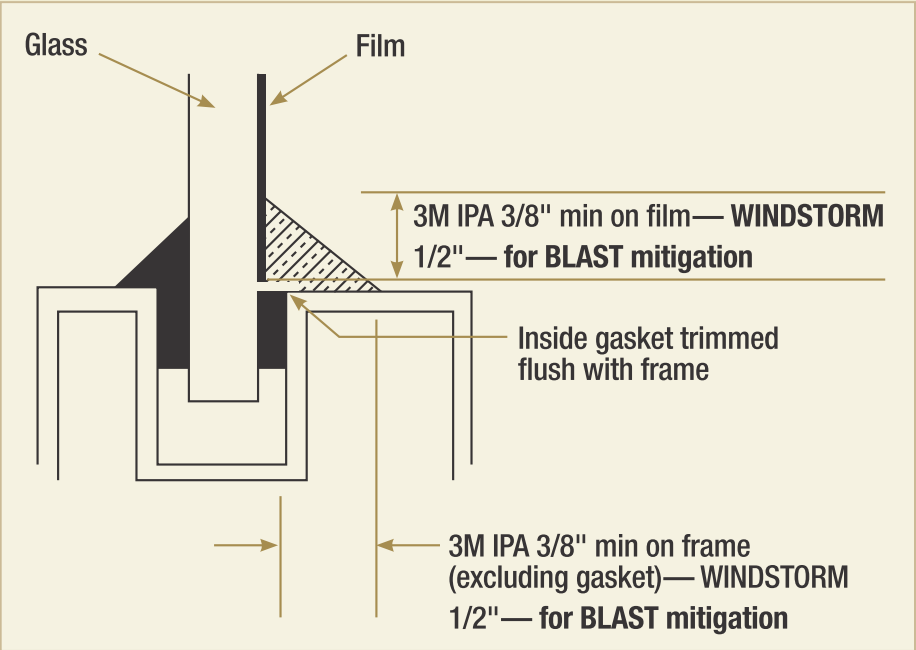




Impact Protection Adhesive Installation

- 1. Apply a 1" (25mm) strip of 3M™ Scotch™ Safe Release™ White Masking Tape to the ultra film surface 3/8" (9mm) in from the edge of the film to all four sides.
- 2. Apply a 1" (25mm) strip of 3M Safe Release Blue Masking Tape to the window frame 3/8" (9mm) from the edge of the trimmed gasket. This will form a parallel sealant channel that will allow a uniform sealant bead to be applied to the glass/frame interface. **Note:** Use a clean drop cloth before proceeding to Step 3.
- 3. Apply a triangular bead of IPA Impact Protection Adhesive, and tool as needed to form an acceptable finish. Refer to Figure 1. **Read and follow all product information and installation instructions provided by 3M Company.** We recommend you start in a corner and apply the sealant bead out approximately 6". Then turn the gun and push the sealant bead to the next corner where the same method is repeated. **Pushing the sealant bead will insure proper penetration and minimize the chances of air gaps in the bead.** Pulling the gun can also be done if confident no air gaps are formed.
- 4. Smooth the sealant bead with an appropriate tool, if necessary, to give a finished look. Tooling should be completed in one continuous stroke immediately after adhesive application and before a skin forms.

Figure 1. 3M™ IPA System Typical Configuration



- 5. Carefully remove the two masking strips from the glass/frame immediately after tooling. Do not allow the excess adhesive to contact the film, frame or flooring surfaces. A light colored drop cloth is needed to protect the work area. **Be careful not to step on adhesive and transfer it to surrounding surfaces.**

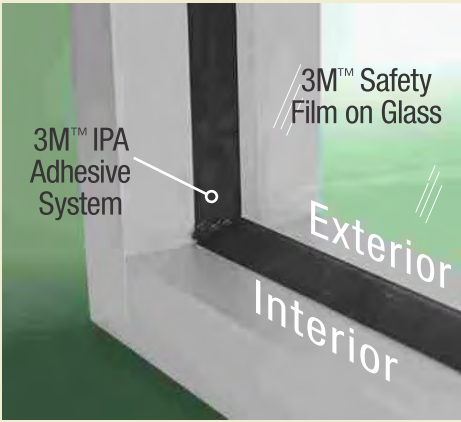
**Note:** Should you get some of the adhesive on the surrounding surfaces, an application and gentle wipe with a 3M Citrus Based Cleaner is recommended.

Curing time for the IPA will vary depending on temperature and relative humidity. It is not recommended to clean the film/IPA system for at least 36 hours following the installation. Full curing/adhesion can take up to 7 days, depending on conditions.

Table 1

Property	Test Method Used	Units	3M IPA
Curing Time (25°C (77°F), 50% RH)		days	3-7
Full Adhesion		days	7-14
Tack-Free Time (25°C (77°F), 50% RH)	ASTM D5895	minutes	21
Flow, Sag or Slump		inches	0
Working Time (25°C (77°F), 50% RH)		minutes	10–20
Specific Gravity		n/a	1.403
VOC content		g/L	16
<b>As Cured — After 21 Days at 25°C (77°F), 50% RH</b>			
Ultimate Tensile Strength	ASTM D0412	psi (Mpa)	380 (2.62)
Ultimate Elongation	ASTM D0412	%	640
Durometer Hardness, Shore A	ASTM D2240	points	38–39
Tear Strength, Die B	ASTM D0624	ppi	72

Bomb Blast and Windstorm Testing results available upon request.



**IMPORTANT NOTICE: 3M MAKES NO PERFORMANCE PROMISES OR OTHER REPRESENTATIONS ABOUT THE EFFECTIVENESS OF THE IPA ATTACHMENT SYSTEM FOR USE WITH 3M WINDOW FILM IN A PARTICULAR APPLICATION.** All statements, technical information and recommendations contained in these IPA Attachment System installation instructions are based on tests believed to be reliable. However, many factors beyond the control of 3M can affect the use and performance of the 3M products in particular applications. Because these factors are uniquely within the user's knowledge and control, it is essential that the user evaluates and determines whether the 3M Ultra Safety & Security Window Film and/or 3M Impact Protection Adhesive Attachment System are appropriate for the particular application.



Building and Commercial Services Division

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please call **1-800-480-1704**  
or visit us at [www.3M.com/windowfilm](http://www.3M.com/windowfilm)



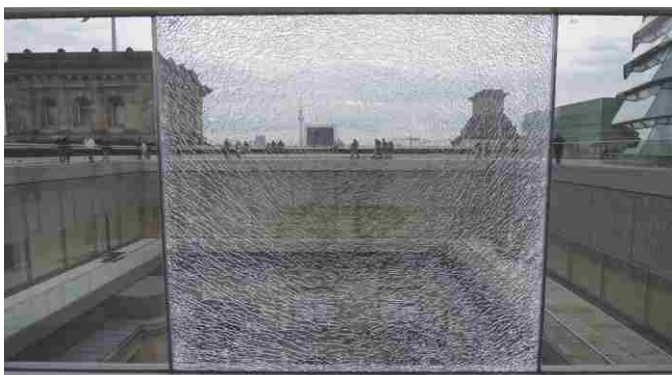
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As many as  
one out of every  
**150**  
windows may  
spontaneously break\*

\*Study states a NIS stone with the potential to cause SGB occurs 1 out of every 4–12 tons of glass. Assuming glass weighs 3 lbs/sq. ft. and a typical window size of 40 sq. ft.

# A step ahead of glass explosion.

## 3M™ Safety Window Films & Attachment Systems — Spontaneous Glass Breakage Protection



- ▶ Tempered safety glass is routinely used because it's stronger than standard glass, but it also presents the risk of Spontaneous Glass Breakage (SGB)
- ▶ While tempered glass fragments tend to be less sharp, falling glass or the elimination of a protection barrier like a glass railing can present major safety risks
- ▶ Together, 3M science and you can help contain tempered glass upon (or during) spontaneous glass breakage
- ▶ 3M™ Safety Window Films & Attachment Systems are your proven, preventive solution

**Protected by 3M™ Window Film**



Protect people and property.

Tempered glass can contain impurities like Nickel Sulfide inclusions. When the glass expands and contracts during daily and seasonal temperature cycles, these stresses can cause the glass to explode. You can provide protection to people and property by using 3M™ Safety Window Films & Attachment Systems to secure the broken glass within the frame and prevent glass fragments from falling from windows, balconies and guardrails.

Protection inside and out.

Tempered glass is used in many interior applications like elevators, banisters, and guard rails and even shower doors. It’s also commonly used for exterior balconies and on the exterior pane of double pane glass windows. Many of architectural glass designs, while visually appealing, pose a spontaneous glass breakage safety risk. 3M Safety Window Films & Attachment Systems can minimize these hazards at a fraction of the cost of replacing tempered glass.

Save money fast.

3M Safety Window Films & Attachment Systems can also include solar energy rejection features to help reduce air conditioning costs and save you money. In fact, you can recoup your 3M™ Window Films investment in as little as three years.



Spontaneous Glass Breakage Statistics	
Glass Manufacturer A	Warrant no more than 5 out of 1,000 — if heat treated
Glass Manufacturer B	Recognize that spontaneous glass breakage occurs, but does not warrant against glass breakage
Glass Manufacturer C	References 2 studies stating spontaneous glass breakage may occur 1 out of 150–400 panes*

\*Study states a NiS stone with the potential to cause SGB occurs 1 out of every 4–12 tons of glass. Assuming glass weighs 3 lbs/sq. ft. and a typical window size of 40 sq. ft.

Protect against spontaneous glass breakage at 3M.com/WindowFilm.

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Science.  
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Property crimes  
occur every

**1**  
second

# Keeping what's important intact.

**Nothing can shatter your confidence more than a break-in. Add a level of safety and security with 3M™ Security Window Films & Attachment Systems.**



- ▶ Windows are one of the weakest points on your building or home
- ▶ Provide precious time by helping to deter unwanted individuals from entering your building or home
- ▶ Provide added protection to property from smash and grab burglaries
- ▶ Helps protect your occupants from broken glass hazards
- ▶ Attachment systems anchor the film to the glass frame, supplying additional protection if the glass is broken

Protected by 3M™ Window Film

## Protecting your loved ones at home.

Alarm systems will tell you when someone has broken into your home, however, wouldn't it be better to keep intruders out of your home altogether? Recent testing has shown 3M™ Security Window Films & Attachment Systems can resist attack and deter an intruder for as long as two minutes.\*\* This can give you valuable time to prepare and may discourage the intruder from entering altogether.

## Protecting your assets at work.

In 2012, over \$15 billion dollars were lost due to property related crimes.\* You need to display your merchandise next to your windows, but your windows are one of the weakest points of entry on a building. 3M™ Security Window Films & Attachment Systems will make it more difficult to get through your window, helping to reduce your losses during smash and grab crimes.

## Protecting your loved ones at school.

The glass on windows and doors of a school can be a vulnerable entry point into the building. Most schools do not have fortified glass to prevent shattering, resulting in potentially easy access through the window. We are proud to say that 3M™ Security Window Films & Attachment Systems have already been incorporated into thousands of schools.

## Security with a payback.

Unlike many security upgrades, 3M Window Films can also provide a payback in as little as three years. 3M Security Window Films can include solar energy rejection, which helps reduce air conditioning costs, saving you money.

## Global Crime Statistics\*

### Property Crimes

Occur every 1 second

Nearly 100 million reported annually

\*<http://www.iii.org/fact-statistic/crime>

\*\*Performance is highly dependent on numerous factors. Results will vary. Contact 3M for more information.

## Provide protection to people and property at [3M.com/WindowFilm](http://3M.com/WindowFilm).

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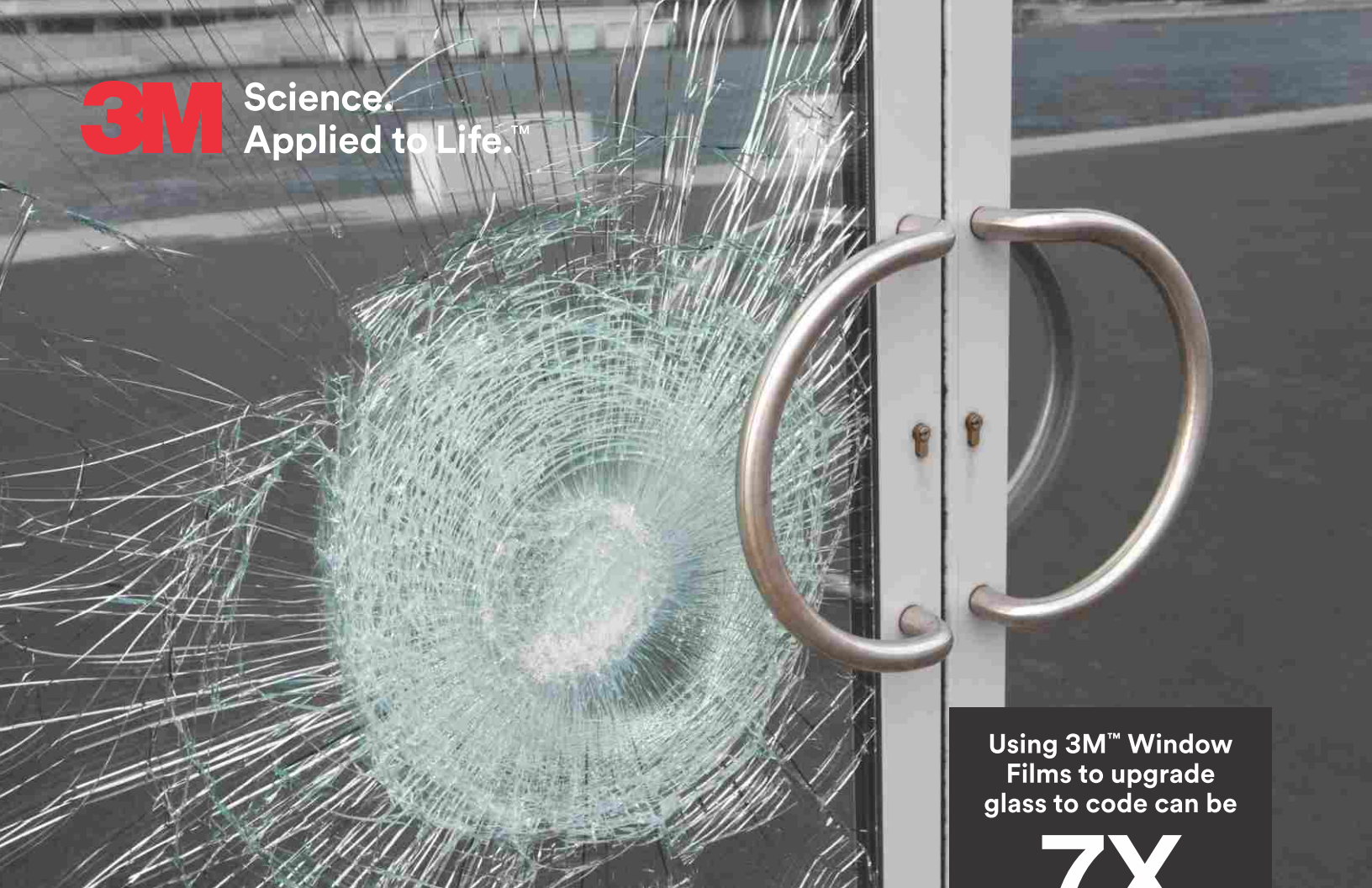
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Using 3M™ Window  
Films to upgrade  
glass to code can be

**7X**

less expensive than  
installing new windows

# Protect people and upgrade to code.\*

**3M™ Safety Window Films &  
Attachment Systems —  
Safety Glazing**

- ▶ Tested to meet safety glazing impact requirements
- ▶ Can be a cost effective solution to replacing windows
- ▶ Can reduce risk of cutting or piercing injuries

\*Building codes vary. Consult with a local building code official.



**Protected by 3M™ Window Film**

## Proven to perform.

Building code references safety glass standards such as ANSI Z97.1 or 16 CFR 1201. 3M™ Safety Window Films have been impact tested to these and other safety glass standards, and third party test reports are available from independent test labs, such as those that may be accredited by the Safety Glazing Certification Council to facilitate approval by a local code official.

## Cost effective and up to code.\*

Building code may specify that glass in certain hazardous locations, such as glazing near wet surfaces, doors, floors, ramps and stairs meet certain safety glazing requirements. 3M™ Safety Windows Films & Attachment Systems can help you quickly and easily meet safety glazing impact requirements at a fraction of the cost of replacing windows.\*\*

## Your practical solution.

If the wrong glass was installed on your new construction project, 3M™ Safety Windows Films & Attachment Systems can be a cost effective solution without replacing them — and without significant delays.

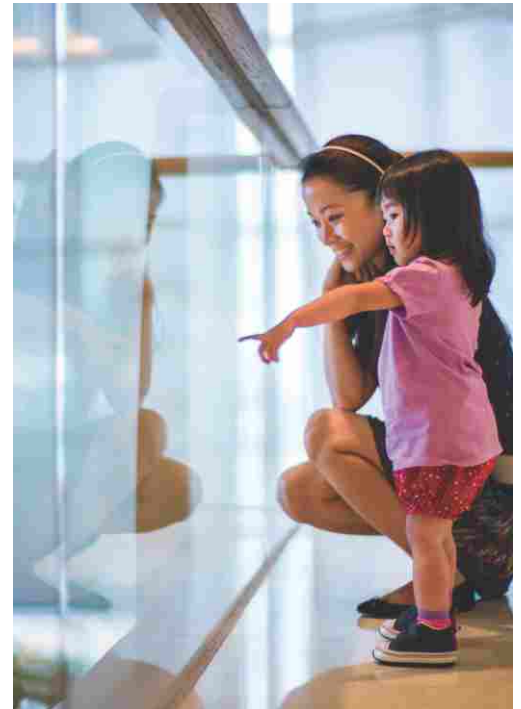
## A wider margin of safety.

3M is committed to providing products that enhance and improve homes, businesses and lives. 3M science helps you cost effectively fortify existing windows with 3M™ Safety Windows Films & Attachment Systems. You can use our strong, micro-layered, tear resistant films to help keep people safe while you upgrade to code. Once the film is applied, if windows break they are designed to break in a manner that reduces the risk of cutting or piercing injuries.

## Save money fast.

3M™ Safety Windows Films & Attachment Systems can also include solar energy rejection features to help reduce air conditioning costs and save you money. In fact, you can recoup your 3M™ Window Films investment in as little as three years.

## Enhance glass safety at [3M.com/WindowFilm](https://www.3m.com/WindowFilm).



\*Building codes vary. Consult with a local building code official.

\*\*According to 16 CFR 1201 Safety Standard for Architectural Glazing Materials. Local building codes vary, consult a local code official for requirements and approval criteria.

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Science.  
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On average, natural  
catastrophes cause

**\$95B**

in losses every year

# Proven protection for seismic events.

## 3M™ Safety Window Films & Attachment Systems — Seismic Protection



- ▶ If the earth should start to shake, you'll want to make sure people and property have been protected from falling glass
- ▶ Together, 3M science and you can help retain glass within its frame, reduce the risk of falling glass shards and maintain glass barriers of protection
- ▶ 3M™ Safety Window Films & Attachment Systems are your proven, preventive solution

Protected by 3M™ Window Film

## Performance you can trust.

Japan has some of the highest seismic activity in the world with nearly weekly occurrences. So it should be no surprise that safety glass standards in Japan also require performance criteria related to earthquakes. 3M™ Safety Window Films are tested against these requirements and are used for seismic protection throughout the region.

## Maintain building occupancy.

If windows fall out of their frames during an earthquake, the space will be unsafe for building occupants. 3M™ Safety Window Films & Attachment Systems help hold glass in place and may allow for continued building occupancy while glass is replaced.

## Save money fast.

3M™ Safety Window Films & Attachment Systems can also include solar energy rejection features to help reduce air conditioning costs and save you money. In fact, you can recoup your 3M™ Window Films investment in as little as three years.



## Product Performance and Technical Data

Global Seismic Statistics from 2000 to 2012*	
Total Number of Earthquakes	~300,000
Number of Earthquakes 6.0+	~1,800
Estimated Deaths	~800,000

\*According to the U.S. Geological Survey, <http://earthquake.usgs.gov/earthquakes/eqarchives/year/eqstats.php>

## Reduce the risk of falling glass shards and maintain glass barriers of protection at [3M.com/WindowFilm](http://3M.com/WindowFilm).

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## COMPLETION PHOTOS

